



**DECLARATION UNDER 37 C.F.R. 1.131**

We, James R. Doran, Paul W. Everett, Gordan G. Greenlee, and Ashraf N. Ibrahim do hereby declare that we are joint inventors of the subject matter which is claimed in our U.S. patent application S.N. 10/037,175 which was filed 11/09/2001 in the United States Patent and Trademark office.

We further declare that the invention disclosed and claimed in said application 10/037,175 was conceived by us in the United States and was reduced to practice in the United States by us and/or under our direction or supervision prior to June 8, 2004, the issuance date of U.S. Patent 6,748,386.

**CONCEPTION**

We further declare that prior to April 24, 2001, the invention disclosed and claimed in the above U.S. patent application was conceived by us in the United States and was thereafter reduced to practice in the United States by us and/or under our direction or supervision. In particular, we declare that an enterprise directory service apparatus was constructed which included a data store having a plurality of directory entries, a web server having an API coupled to the data store for sending a query to the data store and receiving a directory entry, and a wrapper coupled to the API for accepting the query from a user application.

We further declare that the above is evidenced by the following exhibits, true copies of which are included herewith, all of which have dates removed:

1. EXHIBIT A--IBM invention disclosure SMS8-2001-0025 which formed the basis for the present application S.N. 10,037,175;
2. EXHIBIT B--Enterprise Directory Solution White Paper, a five page document originally attached to Exhibit A;
3. EXHIBIT C--Architecture Diagram bparch1, also attached to EXHIBIT A. EXHIBITS A, B, and C describe the invention claimed in S.N. 10/037,175, and were prepared and submitted to our employer, International Business Machines Corporation prior to (April 24, 2001) the priority date of the cited U.S. Patent 6,748,386 by Li.

#### **DUE DILIGENCE**

Prior to April 24, 2001, the effective date of the Li document, we the inventors worked diligently on the invention recited in the claimed inventions, and the subsequent above-identified application, for filing in the U.S. Patent and Trademark Office on November 9, 2001. This included communication between IBM Counsel and the inventors from January 30, 2001 (submission of the invention to IBM Counsel), up to the date of filing of the executed application (November 09, 2001--filing of a patent application). All of us inventors were involved in working diligently in providing IBM Counsel the pertinent information relating to the inventive concept, including completing the attached invention disclosure of EXHIBITS A, B, and C.

Additional evidence of our diligence is provided in the following exhibits:

1. EXHIBIT D--A copy of an evaluation of our disclosure by IBM evaluator, Fred Rogers, recommending a search be done;
2. EXHIBIT E--a copy of a letter from IBM Patent Agent, John Pivnichny, Reg. No. 43,001, to us transmitting the search resulting documents to us for our review;
3. EXHIBIT F--a copy of a note from IBM paralegal, Jen Smith, faxed to patent draftsman, Michael Vorobyov, requesting completion of the formal drawings for our patent application; and
4. EXHIBIT G--A copy of an electronic communication (note) from IBM Patent Agent, John Pivnichny, to us documenting his investigation of inventorship with us.

Pertinent dates in the above documents have been removed. We declare that such dates all fall between January 30, 2001, and November 9, 2001.

Prior to the filing of the above-identified application in the U.S. Patent Office, Inventor Gordan Greenlee, communicated with IBM Counsel, on behalf of all of the inventors, in preparing such patent application based on the submitted disclosure. In particular, such communications occurred on June 13, 2001, and October 22, 2001. We all worked diligently on the preparation of the patent application with patent counsel until a final draft patent application was completed to our satisfaction. All of the inventors were involved in reviewing and finalizing the application for the present invention prior to the filing of the above-identified application as noted above.

A draft of the application was forwarded to us by IBM counsel, at which time we executed all appropriate documents for

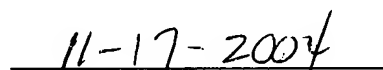
filing in the appropriate governmental offices on November 9, 2001.

We declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further, that the statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

\_\_\_\_\_  
James R. Doran


\_\_\_\_\_  
Date

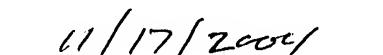




Paul W. Everett

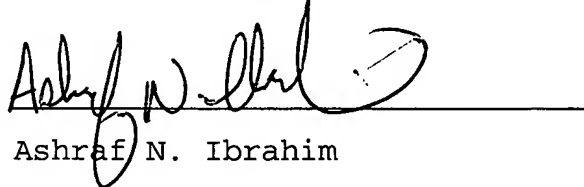
Date

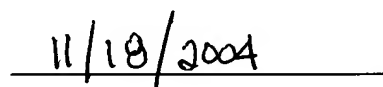




Gordon G. Greenlee

Date





Ashraf N. Ibrahim

Date

## EXHIBIT A

**Disclosure SMS8-2001-0025**

Prepared for and/or by an IBM Attorney - IBM Confidential

Created By: Gordan Greenlee

Last Modified By: Chris Appleman

Oing

Required fields are marked with the asterisk (\*) and must be filled in to complete the form.

**\*Title of disclosure (in English)**

BluePages - Enterprise Directory and Custom interfaces

**Summary**

Status	Under Evaluation
Original Location	SMS
Processing Location	END
Functional Area	GS-(FLANNERY) IBM Global Services
Attorney/Patent Professional	John Pivnichny/Endicott/IBM
IDT Team	Richard Malek/Endicott/IBM; Robert L King/Endicott/IBM; Jon B. Martens/Endicott/IBM; Fred Rogers/Endicott/IBM; Barbara Tiffany/Endicott/IBM
Submitted Date	
Owning Division	GS
Incentive Program	
Lab	FLANNERY
Technology Code	
PVT Score	16

**Inventors with Lotus Notes IDs**

Inventors: Gordan Greenlee/Endicott/IBM, Mathew Nelson/Southbury/IBM, Jim Doran/Somers/IBM, Ted Timashenka/Endicott/IBM, Paulo Palacios/Los Angeles/IBM, Richard E Weingarten/Boulder/IBM, Ashraf Ibrahim/Endicott/IBM, Paul Everett/Endicott/IBM, Sean Aschen/Southbury/IBM, Anne Kline/Endicott/IBM, Raymond Lee/Southbury/IBM, Michael Van Der Meulen/Southbury/IBM

Inventor Name	Inventor Serial	Div/Dept	Inventor Phone	Manager Name
Greenlee, G.G. (Gordan)	079919	07/4HAA	852-6328	Daws, Jeffrey A.
Nelson, Mathew	229645	78/GGGA	693-3704	Grossman, David J.
Doran, James R.	335489	10/H5RA	376-4247	Advani, H.G. (Hira)
Timashenka, Theodore F. (Ted)	091445	07/4HAA	852-5077	Daws, Jeffrey A.
Palacios, Paulo R.	035814	05/IEOA	925-5978	Jefferson, W.C. (Winnifer)
Weingarten, Richard E.	920291	07/0TMF	347-1084	Kleespies, Thomas P.
Ibrahim, Ashraf N.	398003	07/4HAA	852-6750	Daws, Jeffrey A.
Everett, P.W. (Paul)	429180	2C/TMTG	852-1183	Kittle, B.M. (Betty)
Aschen, Sean	770658	07/4PXA	376-5279	Burch, M.D. (Michael)
Kline, A. (Anne)	093030	07/4HAA	852-5691	Daws, Jeffrey A.

Lee, Raymond (Ray)	491842	78/GGGA	693-0585	Grossman, David J.
Vandermeulen, Michael	092468	78/MHWA	376-5332	Harper, Jane E.

> denotes primary contact

## Inventors without Lotus Notes IDs

### IDT Selection

Select Functional Area

<b>IDT Team:</b> Richard Malek/Endicott/IBM Robert L King/Endicott/IBM Jon B. Martens/Endicott/IBM Fred Rogers/Endicott/IBM Barbara Tiffany/Endicott/IBM	<b>Attorney/Patent Professional:</b> John Pivnichny/Endicott/IBM
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### Response Due to IP&L :

#### \*Main Idea

1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.

Large corporations and governments are having problems creating a central enterprise directory that can be accessible thru an intranet/internet web page, application programming interfaces (API) and they are asking IBM to help them solve their enterprise directory issues. These outside interest are seeking the architecture, implementation, and components of IBM's enterprise directory solution, known as BluePages, that uses a single site installation to providing worldwide availability 24x7 - 365 days a year, which unprecedented in the IT industry.

2. How does the invention solve the problem or achieve an advantage,(a description of "the invention", including figures inline as appropriate)?



Whitepaperbp.lwr

3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?

The IBM Bluepages provides the convenience of a single source of employee directory information, combined with an easy-to-use industry standard interface know as LDAP (Lightweight Directory Access Protocol). Many popular software packages support LDAP as a mechanism for looking up address information. However, it's believed that IBM BluePages packages out scales and out performs the competition. It has become the core directory for IBM, replacing a small conglomeration of other "legacy" directories that had been in use in IBM for several years. Today, the solution, referred to as "BluePages", has several different facets, including what the industry calls a "white pages solution", accessible to the IBM employee via the web, as well as broad spectrum application programming interfaces (APIs). The APIs encompass both industry standard "direct to LDAP" APIs, as well as support for a custom API, which we developed to support IBM's web-enabled applications and Notes-based environment. The directory data contained in BluePages is always kept up to date, via a nightly update process. IBM's BluePages directory infrastructure has high availability, via the capability of redundant hardware, as well as 24 by 7 automated monitoring. This is critical, as it is the directory cornerstone to hundreds of IBM internal directory-enabled applications.

4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure

details to others and the date of that implementation.

BluePages currently uses eDirectory Version 2.1. EDirect 2.1 supports only one master server, so our architecture reflects that limitation. The master LDAP server currently resides in Boulder where it is updated every night by the Feed machine. The custom feed code determines changes that have been made to CallUp and the Notes NABs and applies those changes to the master server. The master then sends those changes to its replica servers, which is also located in Boulder. Only the master can accept updates to the data. If a client attempts to update a replica, the replica returns a referral to the master. The client then could attempt to update the master.

The primary interaction that occurs with any enterprise directory is reading or looking up employee's information. And to broker these request, an eNetwork Dispatcher machine sits in front of the replica servers balancing the load. For BluePages these request come in two basic flavors: the BluePages GUI, and application programming interfaces (APIs). The BluePages GUI is a fairly simple looking application, but there is no need for anything more. It has its own URL within the IBM intranet, w3.ibm.com/bluepages, which returns a frameset that consists of a header, footer, and center frame. The header and footer frames hold HTML files that contain links to other pages and sites. The APIs that can be used with BluePages are industry standard or one of our custom ones. The industry standard LDAP API's are available in C/C++, Java and Perl making it possible to LDAP-enable nearly any application on any platform. However, three custom APIs were developed prior to using LDAP as the backend data store. These APIs were covered to address the LDAP data store without impact to existing production downstream applications. The first of these custom APIs known as the BluePages Web Server API allows programs to retrieve information from the directory over the IBM internal network. This is a base API using HTTP protocol and is used by the second custom API, BluePages Lotus Script API to service Notes applications, and the third custom API, BluePages Java API. The Web Server API can also be used directly from any language that supports use of the HTTP protocol. The fourth custom BluePages API SLAPHAPI (Standalone LDAP HTTP API) is a high-level API for accessing LDAP directories using HTTP requests. It allows quick, easy access to LDAP directories from Web applications written in any programming language to retrieve information from the directory over the IBM internal network. The information can be returned in text, HTML, or XML formats.

To achieve extremely high throughput and availability, custom tuning, monitor, and recycling scripts were created to help ensure maximum efficiency of the BluePages server environment.

The basic architecture is as follows:



bparch1.gif

#### \*Critical Questions (Questions 1-9 must be answered)

##### \* Question 1

On what date was the invention workable?

Please format the date as MM/DD/YYYY

(Workable means i.e. when you know that your design will solve the problem)

##### \* Question 2

Is there any planned or actual publication or disclosure of your invention to anyone outside IBM?

☒ Yes  
☐ No

If yes, Enter the name of each publication or patent and the date published below.

Publication/Patent: White Paper: BluePages

Date Published or Issued:

Are you aware of any publications, products or patents that relate to this invention? ☒ Yes  
☐ No

If yes, Enter the name of each publication or patent and the date published below.

Publication/Patent: White Paper: BluePages

Date Published or Issued:

**\*Question 3**

Has the subject matter of the invention or a product incorporating the invention been sold, used internally in manufacturing, announced for sale, or included in a proposal? ☒ Yes  
☐ No

Is a sale, use in manufacturing, product announcement, or proposal planned? ☒ Yes  
☐ No

If Yes, identify the product if known and indicate the date or planned date of sale, announcements, or proposal and to whom the sale, announcement or proposal has been or will be made.

Product: BluePages

Version/Release: Release 1.0

Code Name: BluePages (DB/2)

Date:

To Whom: IBM Internal Use Only

Product: BluePages

Version/Release: Release 2.0

Code Name: BluePages (LDAP)

Date:

To Whom: IBM Internal Use Only

Product: BluePages

Version/Release: Release 2.1

Code Name: BluePages

Date:

To Whom: IBM Internal Use Only

If more than one, use cut and paste and append as necessary in the field provided.

**\*Question 4**

Was the subject matter of your invention or a product incorporating your invention used in public, e.g., outside IBM or in the presence of non-IBMers?

If yes, give a date. Please format the date as MM/DD/YYYY

☐ Yes

☒ No

**\*Question 5**

Have you ever discussed your invention with others not employed at IBM?

☒ Yes

☐ No

If yes, identify individuals and date discussed. Fill in the text area with the following information, the names of the individuals, the employer, date discussed, under CDA, and CDA #.

The custom-API known as SLAPHAPI was discussed by Jim Doran. Here's a link to the discussion:

[http://www.dsml.org/dsml\\_in\\_action/ibm.html](http://www.dsml.org/dsml_in_action/ibm.html)

**\*Question 6**

Was the invention, in any way, started or developed under a government contract or project?

☐ Yes

☒ No

☐ Not sure



If Yes, enter the contract number

**\*Question 7**

Was the invention made in the course of any alliance, joint development or other contract activities?

☐ Yes  
☒ No  
☐ Not Sure

If Yes, enter the following (in English):

Name of Alliance, Contractor or Joint Developer
Contract ID number
Relationship contact name
Relationship contact E-mail
Relationship contact phone

**\*Question 8**

Have you, or any of the other inventors, submitted this same invention disclosure or similar invention disclosure previously?

☐ Yes  
☒ No

If Yes, please provide disclosure number below:

**\*Question 9**

Are you, or any of the other inventors, aware of any related inventions disclosures submitted by anyone in IBM previously?

☐ Yes  
☒ No

If Yes, please provide the docket or disclosure number or any other identifying information below:

**Question 10**

What type of companies do you expect to compete with inventions of this type? *Check all that apply.*

- ☐ Manufacturers of enterprise servers
- ☐ Manufacturers of entry servers
- ☐ Manufacturers of workstations
- ☐ Manufacturers of PC's
- ☐ Non-computer manufacturers
- ☐ Developers of operating systems
- ☐ Developers of networking software
- ☒ Developers of application software
- ☒ Integrated solution providers
- ☒ Service providers
- ☐ Other (Please specify below)

**Question 11**

If the invention relates to a product or service that is outside the scope of your business unit, please recommend IBM business unit(s), IBM location(s) or individual(s) within IBM that you think would provide a good evaluation of your invention:

**Patent Value Tool (Optional - this may be used by the inventor and attorney to assist with the evaluation)**  
(The Patent Value tool can be used by the inventor(s) to determine the potential licensing value of your invention.)

These are the answers which were entered into the Patent Value Tool. If you would like to modify these answers and recalculate the PVT score, click on the 'Calculate' button.

### **Market**

What is the anticipated annual market size (in dollars) that will be captured by your invention?

Too new to estimate

Reason(s) for above Answer Full potential is unknown at this time. It's thought to be sizeable.

### **CLAIMS**

**Question 1** - How new is the technical field?

Existing

Reason(s) for above Answer Deployed internal

**Question 2** - How central is the invention to the product(s) which might be expected to contain the invention?

Entire Product

**Question 3** - What is the scope of the claim?

Broad

### **PORTFOLIO NEED**

What are the portfolio needs in the area of your invention?

Unlisted

Reason(s) for above Answer Corporate IT infrastructure

### **EXPLOITATION & ENFORCEMENT**

**Question 1** - How easily can the use of the invention by a competitor be detected?

With work

Reason(s) for above Answer Internal to IBM

**Question 2** - How easily can the use of the invention be avoided by a competitor?

With work

### **BUSINESS VALUE**

**Question 1** - What percentage of the companies producing products in the field of this invention might use this invention?

Unknown

**Question 2** - What is the value of this patent to current or anticipated Alliance Activity between IBM and other companies?

Some value

**Question 3** - What is the value of this patent to current or anticipated Technology Transfer Activity between IBM and other companies?

High value-

**Question 4** - Does it result in prestige to IBM?

Industry wide

Reason(s) for above Answer Outside interest has been seeking the architecture and implementation of IBM's enterprise directory (BluePages) using a single site providing worldwide availability 24x7 - 365 days a year, which unprecedented in the IT industry. Also, there is interest in various components within the architecture.

**Post Disclosure Text & Drawings**

Enter any additional information relating to this disclosure below:

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## EXHIBIT B

**Executive Summary**

In the past two years, IBM has evolved its Enterprise Directory, from a pilot solution serving a population of a few thousand end users, to a Worldwide Enterprise Directory, accessible to all IBM employees. It has become the core directory for IBM, replacing a small conglomeration of other "legacy" directories that had been in use in IBM for several years. Today, the solution, referred to as "BluePages", has several different facets, including what the industry calls a "white pages solution", accessible to the IBM employee via the web, as well as broad spectrum application programming interfaces (APIs). The APIs encompass both industry standard "direct to LDAP" (Lightweight Directory Access Protocol) APIs, as well as support for a custom API, which we developed to support IBM's web-enabled applications and Notes-based environment. The directory data contained in BluePages is always kept up to date, via a nightly update process. IBM's BluePages directory infrastructure has high availability, via the capability of redundant hardware, as well as 24 by 7 automated monitoring. This is critical, as it is the directory cornerstone to hundreds of IBM internal directory-enabled applications. We'll start this paper by discussing the BluePages end user interface, which gives the IBM employee the simple, but efficient, means to readily look up another employee's phone number, e-mail info, etc., from any web accessible browser.

**BluePages as a "White Pages Directory" Solution****What is BluePages?**

IBM's intranet directory solution has become collectively known as The IBM BluePages. There are actually several parts which fall under the name, including the directory datastore itself and the various methods of accessing this data. When this paper was written, the BluePages datastore utilized the IBM SecureWay eDirectory v2.1. For now let's focus on what most people consider to be *the* BluePages – the programs which access the directory datastore.

In order to support the maximum benefit from a unified intranet-based directory, more than one method of data access should be provided. The BluePages solution currently provides several programs for this reason, which include:

- the Graphical User Interface (GUI)
- the Low Bandwidth User Interface (LB)
- the Application Program Interfaces (APIs)

For the majority of IBM employees, the GUI is BluePages, and for that reason it will be covered first. The LB application is merely a version of the GUI without the graphics in an attempt to reduce the network throughput for modem users. The third bullet is plural as BluePages includes several methods for applications to access the directory data, and will be covered in more detail, in a future version of this paper.

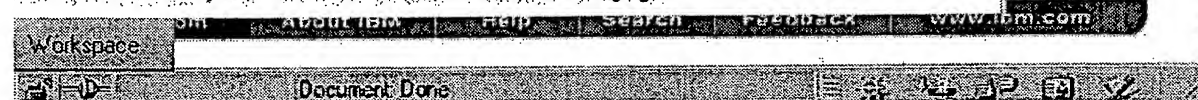
**The BluePages GUI**

The BluePages GUI is a fairly simple looking application, but there is no need for anything more. It has its own URL within the IBM intranet, [w3.ibm.com/bluepages](http://w3.ibm.com/bluepages), which returns a frameset that consists of a header, footer, and center frame. The header and footer frames hold HTML files that contain links to other pages and sites. The center frame holds the application itself. Basically, when an end user enters the above URL, they'll see this:

In the past two years, IBM has evolved its Enterprise Directory from a population of a few thousand end users, to a Worldwide Enterprise Directory for all IBM employees. It has become the core directory for IBM, replacing "legacy" directories that had been in use in IBM for several years. The Enterprise Directory, "BluePages", has several different facets, including what the IBM employee can see accessible to the IBM employee via the web, as well as broad interfaces (APIs). The APIs encompass both industry standard (LDAP) and IBM (Directory Access Protocol) APIs, as well as support for a customer's web-enabled applications and Notes-based environment. BluePages is always kept up to date, via a nightly update process. The architecture has high availability, via the capability of redundant servers and mirrored databases. This is critical, as it is the directory of the company. For more information, contact the following:

555-6877	High-line Manager/OrgD/IBM@IBMUS	Vice President
555-5900	High-line Manager/OrgD/IBM@IBMUS	President & COO
555-0000	CEO/OrgD/IBM@IBMUS	Chairman of the Board and Chief Executive Officer

For more contact numbers, for more addresses, or for Persons page.



Because of the functionality that the BluePages GUI provides, there are other paths to access it. While most of the requests come in from the GUI homepage, several pages accept search criteria and submit queries to the application. The IBM intranet homepage is a perfect example (shown below).

## Enterprise Directory Solution White paper

### Executive Summary

In the past two years, IBM has evolved its Enterprise Directory from a population of a few thousand end users, to a Worldwide Enterprise Directory for all IBM employees.

In these cases, the page merely accepts the search criteria and passes it to the GUI application to handle the lookup and response. There are even more sites that just supply a link to the w3.ibm.com/bluepages URL.

### What is contained within the GUI?

The BluePages GUI application consists of a text field, to enter search criteria; two drop-down selection boxes, to alter/restrict the search; and a button to submit the request. There are seven fields that can be used to search for an entry within the directory. When it comes time to designing your GUI, these can be whatever is desired depending on the information available and the business need. Within the BluePages GUI, these are:

- Name
- Notes Mail
- Internet Address

- User ID
- Job Responsibility
- Tie Line (Internal Phone Number)
- External Phone
- Serial Number (Employee ID)

Some of this data is assigned to employees, while some is entered by the employee themselves. Some attributes are unique (or qualified unique with the help of a another attribute), while others are freeform, so the quality of the data returned will vary on the search criteria provided and the attribute the search is aimed against.

### Searching for Employee Example

As an example, this section will walk-through the screens used to search for the unique entry for *Employee Example*. The first path into the application begins with an end user keying the full name (last name, first name) into the *Search For* text field and selecting the *Go!* button to submit the request (or the end user could have used the <Enter> key on the keyboard). This returns the following.

Search on:	Search for:	Directory:
Name	employee, example	Go! ALL

☐ Same Manager     
 ☐ Report To Chain     
 ☐ Persons Page

DIRECTORY RECORD		PHONES	
Name:	Example, Employee	Ext. Phone:	1-888-555-1212
Employee Type:	Regular	Tie Line:	555-1212
Is Manager:	N	Fax Number:	1-888-555-1313
E-mail Address:	Employee.Example/Org/IBM@IBMUS	Fax Tie Line:	555-1313
Job Responsibility:	Job description text		
Internet Address:	empex@us.ibm.com		
Notes Mail:	Employee.Example/Org/IBM@IBMUS		
Manager:	Manager, First line		
Business Address:	Street Address 1 Street Address 2 Any Town, State Zip		
Floor:	2		
Office:	60		
Building:	330D		
Internal Mail:	87A		
Work Location:	CEF		
Country:	USA		
Department Title:	JHOA 07 Professional Development Manager		
Division:	07		
Department:	JHOA		

Since the search criteria specified enabled the GUI to uniquely identify a single entry in the directory, the complete entry is returned. This is a very simplistic example, and only represents the cleanest possible search. Let's say that we are not sure of the spelling of the employee's first name and only enter a partial first name utilizing a wildcard character to finish the name. This increases the likelihood that we will get more than one entry in our result set – it almost guarantees it. In our example, the search criteria is changed to "employee, ex\*", and the GUI returns this.

employees. It has become the core directory for IBM, replacing "legacy" directories that had been in use in IBM for several years. "BluePages", has several different facets, including what the information is accessible to the IBM employee via the web, as well as broad interfaces (APIs). The APIs encompass both industry standard Directory Access Protocol (DAP) APIs, as well as support for a custom IBM's web-enabled applications and Notes-based environment. BluePages is always kept up to date, via a nightly update process. The infrastructure has high availability, via the capability of redundant servers and automated monitoring. This is critical as it is the directory of the company.



High-line Manager/Org/IBM@IBMUS Vice President

High-line Manager/Org/IBM@IBMUS President & COO

CEO/Org/IBM@IBMUS Chairman of the Board and Chief Executive Officer

Since we added the wildcard to the first name, we receive three entries in our result set. Since the application is not certain which one you are looking for, it returns a partial set of information to help identify the employee. In the case when you are only looking for their E-mail Address, this would be sufficient (there is no need to pull all the information back). Once a name is selected, the full information for that employee is displayed as in the previous example.

You may have noticed a couple other links that were available on the employee's directory page. These are *Same Manager*, *Report-To Chain*, *Manages* (not shown in the example), and *Persona Page*. The *Persona Page* link sends the end-user to another application within the IBM intranet and will not be covered in this white paper. The remaining three all utilize the hierarchical structure that is present within the directory to produce listings of employees (similar to the multiple entry result set above). In our example, when the *Same Manager* link is selected, all of the employees that report to *Example Employee's* manager are displayed.

## Enterprise Directory Solution White paper

### Executive Summary

In the past two years, IBM has evolved its Enterprise Directory from a population of a few thousand end users, to a Worldwide Enterprise directory for all IBM employees. It has become the core directory for IBM, replacing "legacy" directories that had been in use in IBM for several years. "BluePages", has several different facets, including what the information is accessible to the IBM employee via the web, as well as broad interfaces (APIs). The APIs encompass both industry standard Directory Access Protocol (DAP) APIs, as well as support for a custom IBM's web-enabled applications and Notes-based environment.

Similarly, if we select the *Report-To Chain* link from the employee entry, we'd receive a listing of *Example Employee's* managerial chain all the way up to the CEO.

## Enterprise Directory Solution White paper

**Executive Summary**

In the past two years, IBM has evolved its Enterprise Directory population of a few thousand end users, to a Worldwide Enterprise employees. It has become the core directory for IBM, replacing "legacy" directories that had been in use in IBM for several years. "BluePages", has several different facets, including what the information is accessible to the IBM employee via the web, as well as broad interfaces (APIs). The APIs encompass both industry standard Directory Access Protocol (LDAP) APIs, as well as support for a custom IBM's web-enabled applications and Notes-based environment. BluePages is always kept up to date, via a nightly update process. The infrastructure has high availability, via the capability of redundant automated monitoring. This is critical, as it is the directory of



1 1 2 2 3 3 [1 555-6877](#) [High Line Manager/DirD/IBM@IBMUS](#) [Vice President](#)

1 1 2 2 3 3 [1 555-5980](#) [High Line Manager/DirD/IBM@IBMUS](#) [President & COO](#)

1 1 2 2 3 3 [1 555-0000](#) [CEO/DirD/IBM@IBMUS](#) [Chairman of the Board and Chief Executive Officer](#)

\* Click on [1](#) for more contact numbers, [2](#) for more addresses, or [3](#) for Persona page.

**In Closing**

From the above examples, you now have a better idea about the functionality and data presentation of the IBM BluePages solution. Within IBM, it's one of the most frequently accessed applications, both from an end user and directory-enabled application standpoint. As part of building your company's e-business infrastructure, you may also have identified the need for a scalable, robust, web-accessible directory. If you would like to partner with IBM Global Services on inventing or enhancing your directory solution, please contact your IBM Marketing Rep to learn more.



## LDAP BluePages Architecture

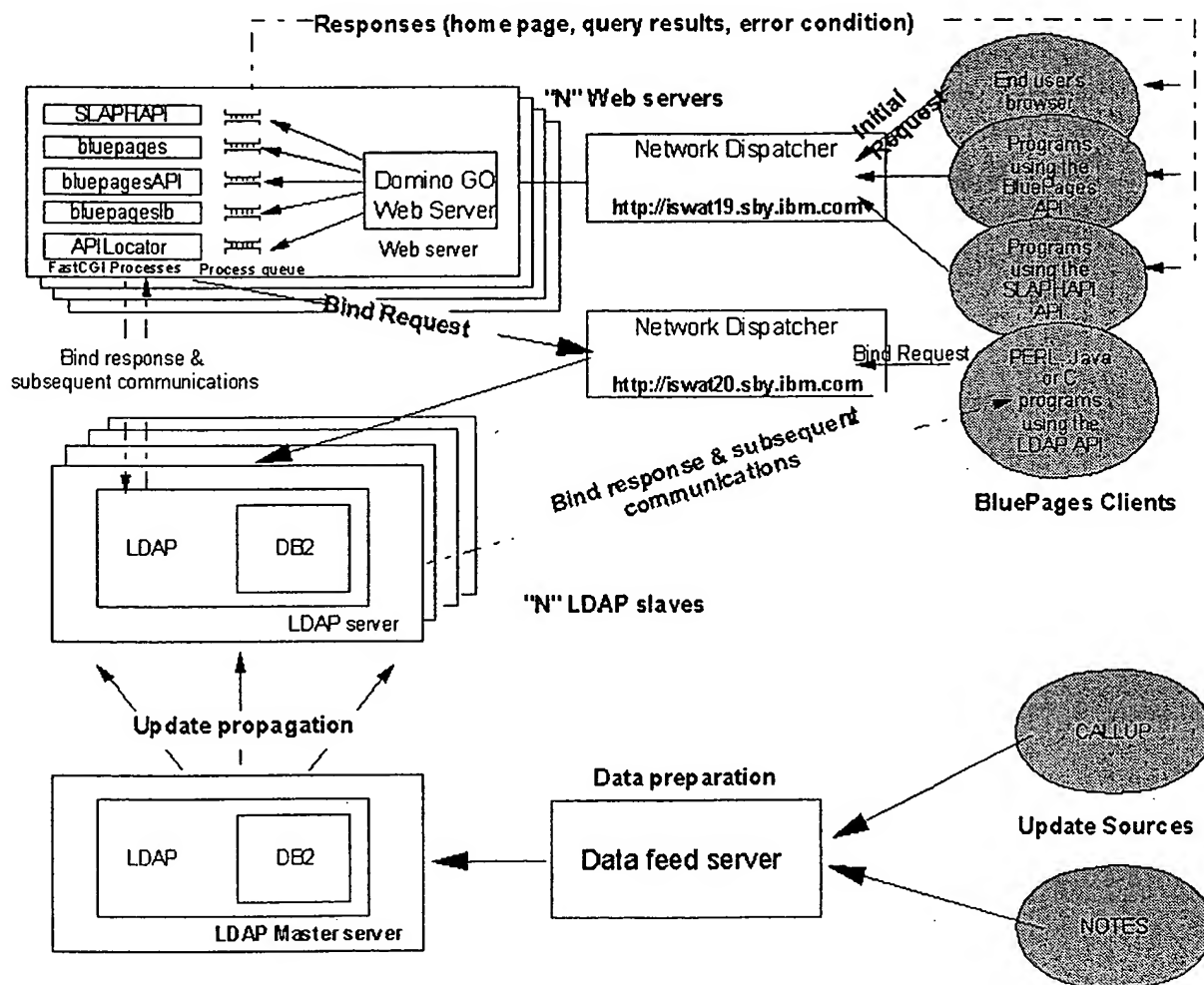


EXHIBIT D



**IP&L Disclosure Evaluation: SMS8-2001-0025**  
Prepared for and/or by an IBM Attorney - IBM Confidential

Created By Fred Rogers  
Last Modified By wpts1 wpts1

Required fields are marked with the asterisk (\*) and must be filled in to complete the form .

**Title of disclosure**

BluePages - Enterprise Directory and Custom interfaces

Date evaluation due to IPL:

Date evaluation submitted to IP&L:

**Evaluation Instructions**

**FACTOR 1 - TECHNICAL CONTRIBUTION**

( Consider all Known publications/products - IBM and External )

- ☐ Subject Matter not new  
☐ Minor Variation from Known technology  
☒ Significant Departure from Known technology  
☐ Major Advance in technology

Reason (s) for above Answer (please specify any technology known to the inventor or the evaluator and explain its relevance)

API for direct access to data. Exposing centralized data through APIs.

**FACTOR 2 - CHARACTER OF PROBLEM SOLVED**

- ☐ No real problem existed  
☐ Minor problem. Suitable alternatives available  
☐ Significant problem. Alternatives have drawbacks  
☐ Major problem. No feasible alternatives

Explain the problem , including describing alternatives and their drawbacks , and any advantages of this invention . What is the most important aspect of the disclosure and the most important advantages/disadvantages in your view?

Do others beside IBM face the problem?

☐ Yes ☐ No

Why so ?

**FACTOR 3 - USE BY IBM**

- ☐ Unlikely  
☐ Possible  
☐ Probable  
☒ Definite

Reason(s) for above answer : (Be specific . If use is Probable or Definite, specify product, version etc.)

**FACTOR 4 - USE BY OTHERS**

- ☐ Unlikely  
☐ Possible  
☐ Probable  
☐ Definite

Reason(s) for above answer : (If use is Probable or Definite, please specify why the innovation will be used by others, which type of companies and which type of products).

**FACTOR 5 - DISCOVERY OF NON-IBM (NI) USE**

- ☐ NI must admit use for IBM to know
- ☐ "Teardown" of NI product would be necessary
- ☐ Careful analysis of NI product or manual required
- ☐ Use obvious to casual observer

Reason(s) for above answer (how would we detect use of invention by others)?

## FACTOR 6 - ADEQUACY OF DESCRIPTION

- ☐ Inadequate. Invention unclear from description
- ☐ Incomplete. Invention aspect poorly described or obscure
- ☐ Further clarification or implementation detail needed
- ☐ Clear and complete as is

Reason(s) for above answer.

## FACTOR 7 - PEOPLE CONSULTED

Inventors (s)

☐ Yes ☐ No

Name others consulted:

Discussed evaluation and recommendation with inventors?

☐ Yes ☐ No

Evaluator recommended decision : ☐ Close  
☐ Publish  
☒ Search

**Close:** A patent would probably have little licensing value or IBM's freedom of use is already assured or is not important.

**Publish:** A patent would probably have limited licensing value to IBM but freedom of use should be preserved.

**Search:** A patent on this subject could have significant licensing value. IPLaw should provide an option on patentability and portfolio value and a recommendation whether to file a patent application.

☐ Additional Search Info: This disclosure should be MERGED before searching and filing with disclosure(s)

**Comments (Note : Limit your comments to technical/business issues)**

---

EXHIBIT E

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\*\*\* IBM CONFIDENTIAL \*\*\*

---

TO: Gordan Greenlee	4HHA/028-4	Endicott	w/Enclosures
Sean Aschen	4PXA/SBY-B4	Southbury	w/oEnclosures
James Doran	H5RA/SBY-B4	Southbury	w/oEnclosures
Paul Everett	AOLG/028-3	Endicott	w/oEnclosures
Ashraf Ibrahim	4HHA/028-4	Endicott	w/oEnclosures
Anne Kline	4HHA/028-4	Endicott	w/oEnclosures
Ray Lee	GGGA/1RS-3N	Southbury	w/oEnclosures
Mathew Nelson	GGGA/1RS-3N	Southbury	w/oEnclosures
Paulo Palacios	IEOA/9481-4	Costa Mesa	w/oEnclosures
Ted Timashenka	4HHA/028-4	Endicott	w/oEnclosures
Michael Van Der Meulen	MHWA/SBY-A2	Southbury	w/oEnclosures
Richard Weingarten	FA4D/026-1	Boulder	w/oEnclosures

DATE:

FROM: John R. Pivnichny / 855-6565  
Patent Agent  
Intellectual Property Law Dept.  
N50/40-4 / Endicott, NY  
IBMUSM09(PIVNICHN)

SUBJECT: Invention Disclosure SMS820010025  
BLUEPAGES- ENTERPRISE DIRECTORY AND CUSTOMER INTERFACES

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I performed a search and found documents related to your invention disclosure listed above. A copy of each of these is enclosed w/ Gordan Greenlee's copy. Please review these and provide me your comments.

If you would prefer to meet with me rather than return a written response to this letter, please let me know. Be sure, however, to review each of these publications and to identify any comments you may have so we can discuss these at this meeting.

If you have any questions concerning the foregoing or if I can be of any assistance to you in reviewing the enclosed publications, please do not hesitate to contact me. HOWEVER, I DO NEED YOUR COMMENTS ASAP. As usual, thank you very much in advance for your attention to this.

*John Pivnichny*

John R. Pivnichny

JRP/jls

EXHIBIT F

IBM ENDICOTT IPLAW

DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	CMDH	STATUS
22		12037402575	G3--S	01'52"	004	092	OK

## Facsimile Transmittal

IBM

ENDICOTT IP LAW

Intellectual Property Law  
1701 North Street, N50/40-4  
Endicott, New York 13760  
Fax Tie Line: 8-855-3250  
Direct Fax: (607)755-3250  
Direct Phone: (607) 755-7700

Date: \_\_\_\_\_  
Total Pages: 4 (Including this one)

\_\_\_\_ IBM CONFIDENTIAL  
\_\_\_\_ PREPARED BY AN IBM ATTORNEY  
\_\_\_\_ PRIVILEGED REVIEW REQUIRED  
\_\_\_\_ PLEASE CONFIRM RECEIPT

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To: Michael Vorobyov  
Fax Number: 203-740-2575

From: Jen Smith  
Direct Phone: 607-755-3231

Subject: EN0920010073464

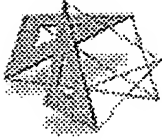
Our File: \_\_\_\_\_

Please send us formal drawings by

Thank you very much,

Jen

EXHIBIT G



**John Pivnichny**

This document expires on

To: Gordan Greenlee/Endicott/IBM@IBMUS, Mathew  
Nelson/Southbury/IBM@IBMUS, Jim Doran/Somers/IBM@IBMUS,  
Ted Timashenka/Endicott/IBM@IBMUS, Paulo Palacios/Los  
Angeles/IBM@IBMUS, Richard E Weingarten/Boulder/IBM@IBMUS,  
Ashraf Ibrahim/Endicott/IBM@IBMUS, Paul  
Everett/Endicott/IBM@IBMUS, Sean Aschen/Southbury/IBM@IBMUS,  
Anne Kline/Endicott/IBM@IBMUS, Raymond  
Lee/Southbury/IBM@IBMUS, Michael Van Der  
Meulen/Southbury/IBM@IBMUS  
cc: Jen L Smith/Endicott/Contr/IBM@IBMUS, Georgia  
Brundage/Endicott/IBM@IBMUS  
From: John Pivnichny/Endicott/IBM@IBMUS  
Subject: Invention disclosure SMS8-2001-0025, Docket END9-2001-0073US1

Twelve names were listed on this disclosure at the time of submission.

Now that we have determined what subject matter is claimed on the patent application, I have performed an inventorship determination for the particular claims involved, in accordance with patent law. For this particular application, only the following persons were co-inventors of the claimed invention.

James Doran

Paul Everett

Gordan, Greenlee

Ashraf Ibrahim

Please feel free to contact me if you have any questions.

John Pivnichny

PREPARED FOR IBM ATTORNEY - PRIVILEGED AND CONFIDENTIAL

IBM Endicott Intellectual Property Law Patent Agent

Dept. N50/Bldg. 040-4, 1701 North Street, Endicott, NY 13760

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